INDEXES

Volume 18, 1989

The indexes in this issue cover
Volumes 1—18

(Figures in bold type refer to the volume number)

INDEX OF AUTHORS

Aarons, L. J., **5,** 359
Ackroyd, J., **11,** 321
Ager, D. J., **11,** 493
Ahlberg, P., **18,** 209
Ahluwalia, J. C., **2,** 203
Allen, N. S., **4,** 533; **15,** 373
Angyal, S. J., **9,** 415
Ambroz, H. B., **8,** 353
Atkinson, D., **8,** 475
Attygalle, A. B., **13,** 245
Baker, A. D., **1,** 355
Bamfield, P., **13,** 443
Barker, B. E., **9,** 143
Barron, L. D., **15,** 261
Bartle, K. D., **10,** 113
Bartlett, P. D., **5,** 149
Baxendale, J. H., **7,** 235
Beattie, I. R., **4,** 107
Beddell, C. R., **13,** 279
Beer, P., **18,** 409
Bell, R. P., **3,** 513
Belson, D. J., **11,** 41
Bender, C. J., **15,** 475; **17,** 317
Bentley, P. H., **2,** 29
Berkoff, C. E., **3,** 273
Billington, D. C., **14,** 93; **18,** 83
Bird, C. L., **10,** 49
Bird, C. W., **3,** 309
Blackburn, B. K., **17,** 147
Blandamer, M. J., **4,** 55; **14,** 137
Blundell, T. L., **6,** 139
Boelens, H., **7,** 167
Bolton, R., **15,** 261
Bowman, W. R., **17,** 283
Bradshaw, T. K., **6,** 43
Braterman, P. S., **2,** 271
Brennan, J., **17,** 1
Bresciani Pahor, N., **18,** 225
Breslow, R., **1,** 553
Brown, D. H., **9,** 217
Brown, I. D., **7,** 359
Brown, K. S., jun., **4,** 263
Brundle, C. R., **1,** 355
Bryce-Smith, D., **15,** 93
Buchanan, G. L., **3,** 41; **17,** 91
Burdett, J. K., **3,** 293; **7,** 507
Burgess, J., **4,** 55; **14,** 137
Burnett, M. G., **12,** 267
Burrows, H. D., **3,** 139
Burtles, S. M., **7,** 201
Butler, A. R., **16,** 361
Butterworth, K. R., **7,** 185
Cadogan, J. I. G., **3,** 87
Carabine, M. D., **1,** 411
Cardin, D. J., **2,** 99
Carless, H. A. J., **1,** 465
Casellato, U., **8,** 199
Çetinkaya, B., **2,** 99
Chamberlain, J., **4,** 569
Chandrasekhar, S., **16,** 313
Chatt, J., **1,** 121
Chesters, J. K., **10,** 270
Child, M. S., **17,** 31
Chisholm, M. H., **14,** 69
Chivers, T., **2,** 233
Clark, G. M., **5,** 269
Clark, R. J. H., **13,** 219
Collins, C. J., **4,** 251
Colvin, E. W., **7,** 15
Connelly, N. G., **18,** 153
Connor, J. N. L., **5,** 125
Corey, E. J., **17,** 111
Corfield, G. C., **1,** 523
Cornforth, J. W., **2,** 1
Cotton, F. A., **4,** 27; **12,** 35
Coulson, E. H., **1,** 495
Covington, A. K., **14,** 265
Cowan, J. M., **8,** 419
Cox, B. G., **9,** 381
Coyle, J. D., **1,** 465; **3,** 329; **4,** 523
Cragg, G. M. L., **6,** 393
Craig, D., **16,** 187
Cramer, R. D., **3,** 273
Crammer, B., **6,** 431; **17,** 229
Cross, R. J., **2,** 271; **9,** 185; **14,** 197
Curthoys, G., **8,** 475
Dack, M. R. J., **4,** 211
Dainton, F. S., **4,** 323
Dalton, H., **8,** 297
Davies, D. I., **8,** 171
Davies, S. G., **17,** 147
de Rijke. D., **7,** 167
de Silva, A. P., **10,** 181
de Valois, P. J., **7,** 167
Dickinson, E., **14,** 421
Dickinson, L. C., **12,** 387
Dobson, J. C., **5,** 79
Dowle, M. D., **8,** 171
Doyle, M. J., **2,** 99
Drummond, I., **2,** 233
Duffield, J. R., **15,** 291
Dunkin, I. R., **9,** 1
Durant, G. J., **14,** 375
Duxbury, G., **12,** 453
Dymond, J. H., **14,** 317
Elliott, M., **7,** 473
Emsley, J., **9,** 91
Engberts, J. B. F. N., **14,** 237
Eschenmoser, A., **5,** 377
Evans, D. A., **2,** 75
Evans, J., **10,** 159
Fenby, D. V., **3,** 193
Fensham, P. J., **13,** 199
Fenton, D. E., **6,** 325; **8,** 199; **17,** 69
Ferguson, L. N., **4,** 289
Fisher, L. R., **6,** 25
Fleming, I., **10,** 83
Flygare, W. H., **6,** 109
Forage, A. J., **8,** 309
Garson, M. J., **8,** 539
Georghiou, P. E., **6,** 83
Gheorghiu, M. D., **10,** 289
Gibson, K. H., **6,** 489
Gilbert, J., **10,** 255
Gilchrist, T. L., **12,** 53
Gillespie, R. J., **8,** 315
Glidewell, C., **16,** 361
Goldschmidt, Z., **17,** 229
Goodings, E. P., **5,** 95
Goodrich, J. A., **14,** 225
Gordon, I. M., **18,** 123
Gordon, P. F., **13,** 443

Gorman, A. A., **10,** 205
Gosney, I., **16,** 45
Gray, B. F., **5,** 359
Gray, H. B., **15,** 17
Grebenik, P., **17,** 453
Green, C. L., **2,** 75
Greenhill, J. V., **6,** 277
Greenwood, N. N., **3,** 231; **13,** 353
Grey Morgan, C., **8,** 367
Grice, R., **11,** 1
Griffiths, J., **1,** 481
Grigg, R., **16,** 89
Grimshaw, J., **10,** 181
Grinter, R., **17,** 453
Grossert, J. S., **1,** 1
Groves, J. K., **1,** 73
Guilford, H., **2,** 249
Gutteridge, N. J. A., **1,** 381
Haines, R. J., **4,** 155
Hall, G. G., **2,** 21
Hall, L. D., **4,** 401
Hall, T. W., **5,** 431
Halliwell, H. F., **3,** 373
Hamdan, I. Y., **8,** 143
Hamer, G., **8,** 143
Harmony, M. D., **1,** 211
Harris, K. R., **5,** 215
Harris, R. K., **5,** 1
Harrison, L. G., **10,** 491
Hartley, F. R., **2,** 163
Hartshorn, S. R., **3,** 167
Hathway, D. E., **9,** 63, 241
Hayward, R. C., **12,** 285
Heaven, M. C., **15,** 405
Heelis, P. F., **11,** 15
Henderson, J. W., **2,** 397
Hepler, L. G., **3,** 193
Hilburn, M. E., **8,** 63
Hinchliffe, A., **5,** 79
Hoffman, D. M., **14,** 69
Holbrook, K. A., **12,** 163
Holland, H. L., **10,** 435; **11,** 37
Holm, R. H., **10,** 455
Hooper, M., **16,** 437
Hore, P. J., **8,** 29
Horton, E. W., **4,** 589
Hough, L., **14,** 357
Hounsell, E. F., **16,** 161
Hudson, M. F., **4,** 363
Huffman, J. C., **14,** 69
Huntress, W. T., jun., **6,** 295
Hutchins, G. J., **18,** 251
Hutchinson, D. W., **6,** 43
Ibers, J. A., **11,** 57
Ikan, R., **6,** 431
Isaacs, N. S., **5,** 181
Isbell, H. S., **3,** 1
Jaffé, H. H., **5,** 165
James, A. M., **8,** 389
Jameson, R. F., **18,** 477
Jamieson, A. M., **2,** 325
Janes, N. F., **7,** 473
Jencks, W. P., **10,** 345
Jenkins, J. A., **6,** 139
Johnson, A. W., **4,** 1; **9,** 125
Johnson, S. P., **5,** 441
Johnstone, A. H., **7,** 317; **9,** 365
Jones, J. R., **10,** 329
Jones, P. G., **13,** 157
Joslin, C. G., **8,** 29
Jotham, R. W., **2,** 457
Kalyanasundaram, K., **7,** 453
Katritzky, A. R., **13,** 47
Keenan, A. G., **8,** 259
Kemball, C., **13,** 375
Kemp, T. J., **3,** 139; **8,** 353
Kennedy, J. F., **2,** 355; **8,** 221
Kennewell, P. D., **4,** 189; **9,** 477
Kenny, A. W., **4,** 90
Kerridge, D. H., **17,** 181
King, G. A. M., **7,** 297
Kirby, G. W., **6,** 1
Kitaigorodsky, A. I., **7,** 133
Koch, K. R., **6,** 393
Kolar, G. F., **9,** 241
Korpela, T., **12,** 309
Kresge, A. J., **2,** 475
Krishnaji, **7,** 219
Kroto, H. W., **11,** 435
Krüger, H., **11,** 227
Kuhn, A. T., **10,** 49
Lappert, M. F., **2,** 99
Lee, M. L., **10,** 113
Lee-Ruff, E., **6,** 195
Legon, A. C., **16,** 467
Leigh, G. J., **1,** 121; **4,** 155
Lemieux, R. U., **7,** 423; **18,** 347
Leznoff, C. C., **3,** 65
Lilley, D. M. J., **18,** 53
Lindberg, B., **10,** 409
Lindley, J., **16,** 275
Lindsay, D. G., **10,** 233
Lindoy, L. F., **4,** 421
Linert, W., **18,** 477
Linford, R. G., **1,** 445
Lipscomb, W. N., **1,** 319
Liu, M. T. H., **11,** 127
Lloyd, D., **16,** 45
Lorimer, J. P., **16,** 239
Lynch, J. M., **3,** 309
Lythgoe, B., **9,** 449
Mäkelä, M. J., **12,** 309
McCleverty, J. A., **12,** 331
McKean, D. C., **7,** 399
McKellar, J. F., **4,** 533
McKervey, M. A., **3,** 479
Mackie, R. K., **3,** 87
McLauchlan, K. A., **8,** 29
McNab, H., **7,** 345
Maier, J. P., **17,** 45
Maitland, G. C., **2,** 181
Maitlis, P. M., **10,** 1
Mann, B. E., **15,** 167
Mann, J., **16,** 381
Manning, P. G., **5,** 233
Maret, A. R., **2,** 325
Markov, P., **13,** 69
Marzilli, L. E., **18,** 225
Maskill, H., **18,** 123
Maslowsky, E., **9,** 25
Mason, R., **1,** 431
Mason, S. F., **17,** 347
Mason, T. J., **16,** 239, 275
Mayo, B. C., **2,** 49
Meadowcroft, A. E., **4,** 99
Menger, H. W., **2,** 415
Meyer, A. Y., **15,** 449
Midgley, D., **4,** 549
Millen, D. J., **5,** 253; **16,** 467
Mills, A., **18,** 285
Mills, R., **5,** 215

Mingos, D. M. P., **15,** 31
Mitchell, J. C., **14,** 399
Moore, D. S., **12,** 415
Moore, H. W., **2,** 415; **10,** 289
Morgan, E. D., **13,** 245
Morley, R., **5,** 269
Morris, D. G., **11,** 397
Morris, J. H., **6,** 173
Morris, J. L., **15,** 1
Müller, J., **16,** 75
Muetterties, E. L., **11,** 283
Mulheirn, L. F., **1,** 259
Munn, A., **4,** 87
Murphy, P. J., **17,** 1
Murphy, W. S., **12,** 213
Musumarra, G., **13,** 47
Newman, J. F., **4,** 77
Nightingale, W. H., **7,** 195
Norman, N. C., **17,** 269
Norman, R. O. C., **8,** 1
North, A. M., **1,** 49
Noyori, R., **18,** 187
Oakenfull, D. G., **6,** 25
O'Donnell, T. A., **16,** 1
Ormiston, R. A., **16,** 45
Overton, K. H., **8,** 447
Page, M. I., **2,** 295
Paleos, C. M., **14,** 45
Papaconstantinou, E., **18,** 1
Paton, R. M., **18,** 33
Pattenden, G., **17,** 361
Paulsen, H., **13,** 15
Pelter, A., **11,** 191
Perkins, P. G., **6,** 173
Perutz, R. N., **17,** 453
Pickford, C. J., **10,** 245
Pindur, U., **16,** 75
Pletcher, D., **4,** 471
Poliakoff, M., **3,** 293; **7,** 527
Prakash, V., **7,** 219
Pratt, A. C., **6,** 63
Pratt, J. M., **14,** 161
Puddephatt, R. J., **12,** 99
Ramm, P. J., **1,** 259
Ramsay, J. D. F., **15,** 335
Randaccio, L., **18,** 225
Rao, C. N. R., **5,** 297; **12,** 361
Ratledge, C., **8,** 283
Rattee, I. D., **1,** 145
Redl, G., **3,** 273
Redpath, J., **12,** 75
Rees, C. W., **15,** 1
Richards, D. H., **6,** 235
Ritch, J. B., jun., **5,** 452
Roberts, M. W., **6,** 373; **18,** 451
Robins, D. J., **18,** 375
Robinson, F. A., **5,** 317
Robinson, J. A., **17,** 383
Robinson, S. D., **12,** 415
Roche, M., **5,** 165
Rodgers, M. A. J., **7,** 235
Roesky, H. W., **15,** 309
Rose, A. E. A., **6,** 173
Rouvray, D. H., **3,** 355
Rowlinson, J. S., **7,** 329; **12,** 251
Ruasse, M.-F., **18,** 123
Sanders, J. K. M., **6,** 467
Sarma, T. S., **2,** 203
Satchell, D. P. N., **4,** 231; **6,** 345
Satchell, R. S., **4,** 231
Scheinmann, F., **11,** 321
Schlegel, W., **7,** 177
Scriven, E. F. V., **12,** 129
Scurrell, M. S., **18,** 251
Self, R., **10,** 255
Senthilnathan, V. P., **5,** 297
Sermon, P. A., **16,** 339
Sherman, L. R., **14,** 225
Sherwood, P. M. A., **14,** 1
Shorter, J., **7,** 1
Simonetta, M., **13,** 1
Simpson, T. J., **4,** 497; **16,** 123
Singh, S., **5,** 297
Slorach, S. A., **10,** 280
Smith, E. B., **2,** 181, **15,** 503
Smith, I. W. M., **14,** 141
Smith, J. A. S., **15,** 225
Smith, K., **3,** 443
Smith, K. M., **4,** 363
Smith, W. E., **6,** 173; **9,** 217
Snell, K. D., **8,** 259
Somorjai, G. A., **13,** 321
Spiro, M., **15,** 141
Stacey, M., **2,** 145
Staunton, J., **8,** 539
Staveley, L. A. K., **13,** 173
Stevens, M. F. G., **7,** 377
Stoddart, J. F., **8,** 85
Stokes, R. H., **11,** 257
Strachan, A. N., **11,** 41
Suckling, C. J., **3,** 387; **13,** 97
Suckling, K. E., **3,** 387
Sutherland, I. O., **15,** 63
Sutherland, J. K., **9,** 265
Sutherland, R. G., **1,** 241
Sutton, D., **4,** 443
Sutton, K. H., **17,** 147
Swan, J. S., **7,** 201
Swindells, R., **7,** 212
Sykes, A. G., **14,** 283
Symons, M. C. R., **5,** 337; **12,** 1, 387; **13,** 393
Takken, H. J., **7,** 167
Taylor, J. B., **4,** 189; **9,** 477
Taylor, S. E., **10,** 329
Thea, S., **15,** 125
Theobald, D. W., **5,** 203
Thibblin, A., **18,** 209
Thomas, T. W., **1,** 99
Thompson, M., **1,** 355
Thornber, C. W., **8,** 563
Tincknell, R. C., **5,** 463
Toennies, J. P., **3,** 407
Tolman, C. A., **1,** 337
Trost, B. M., **11,** 141
Truax, D. R., **5,** 411
Twitchett, H. J., **3,** 209
Tyman, J. H. P., **8,** 499
Underhill, A. E., **1,** 99; **9,** 429
van Dort, J. M., **7,** 167
van der Linde, L. M., **7,** 167
Varvoglis, A., **10,** 377
Vaughan, K., **7,** 377
Vidali, M., **8,** 199
Vigato, P. A., **8,** 199; **17,** 69

Vollhardt, K. P. C., **9,** 41
Wain, R. L., **6,** 261
Walker, E. R. H., **5,** 23
Walker, I. C., **3,** 467
Waltz, W. L., **1,** 241
Ward, I. M., **3,** 231
Ward, R. S., **11,** 75
Watkins, D. M., **9,** 429
Wattanasin, S., **12,** 213
Westwood, N. P. C., **18,** 317
White, A. J., **3,** 17
Whitfield, R. C., **1,** 27
Whittaker, M., **17,** 147
Widom, B., **14,** 121
Wieser, H., **5,** 411
Wiesner, K., **6,** 413
Williams, A., **15,** 125
Williams, D. H., **13,** 131
Williams, D. L. H., **14,** 171
Williams, D. R., **15,** 291
Williams, G., **7,** 89
Williams, G. H., **15,** 261
Williams, R. J. P., **9,** 281, 325
Wilson, A. D., **7,** 265
Wise, S. A., **10,** 113
Witzel, H., **16,** 75
Woodhouse, J. R., **18,** 251
Yoffe, A. D., **5,** 51
Zangrando, E., **18,** 225
Zeelen, F. J., **12,** 75

INDEX OF TITLES

Abiotic receptors, **12,** 285
Absorption bands in the spectra of stars, a crystal field approach, **5,** 233
Acetamide and acetamide complexes, the chemistry, **17,** 181
Acidity of solid surfaces, **8,** 475
Across the living barrier, **6,** 325
Activation parameters for chemical reactions in solution, **14,** 237
Acylation and alkylation catalysts, 4-dialkylaminopyridines, super, **12,** 129
—— by ketens and isocyanates, a mechanistic comparison, **4,** 231
Acylation, Friedel–Crafts, of alkenes **1,** 73
Adamantane rearrangements, **3,** 379
Affinity chromatography, chemical aspects of, **3,** 249
Alcohols and amines, conformational analysis of, **5,** 411
Aliphatic nucleophilic substitution reactions, new insights into, from the use of pyridines as leaving groups, **13,** 47
Alkali-metal complexes in aqueous solution, **4,** 549
Alkaloids, aconite, synthesis of, **5,** 413
Alkenes, the Friedel–Crafts acylation of, **1,** 73
π-Allylnickel halides as selective reagents in organic synthesis, **14,** 93
Aluminium phosphates, the chemistry and binding properties of, **6,** 173
Amines and alcohols, conformational analysis of, **5,** 411
Analysis of trace constituents of the diet, organic and inorganic, **10,** 245, 255
Analytical methods, modern, for environmental polycyclic aromatic compounds, **10,** 113
Angular geometries of hydrogen-bonded dimers: a simple electrostatic interpretation of the success of the electron pair model, **16,** 467
Anionic cyclization of phenols, **12,** 213
Ants, chemicals from the glands of, **13,** 245
Aphids and scale insects, their chemistry, **4,** 263
Application of electrochemical techniques to the study of homogeneous chemical reactions, **4,** 471
Applications of e.s.r. spectroscopy to kinetics and mechanism in organic chemistry, **8,** 1
Applications of multinuclear NMR to structural and biosynthetic studies of polyketide microbial metabolites, **16,** 123
Application of research findings to the development of commercial flavourings, **7,** 177
Aqueous carbonate solutions, potentiometric titrations of, **14,** 265
Aqueous mixtures, kinetics of reactions in, **4,** 55
Aqueous solution, micelles in, **6,** 25
Arsonium ylides (with some mention also of arsinimines, stibonium and bismuthonium ylides), **16,** 45
Arylation, homolytic, of aromatic and polyfluoroaromatic compounds, **15,** 261
Aryl cations—new light on old intermediates, **8,** 353
—— halides, photochemistry and photocyclization of, **10,** 181
Aryldiazonium cations, co-ordination chemistry of, **4,** 443
Aryliodine(III) dicarboxylates, **10,** 377
Atmosphere, interactions in, of droplets and gases, **1,** 411
Autocatalysis, **7,** 297
Azidoquinones and related compounds, chemistry of, **2,** 415
Azobenzene and its derivatives, photochemistry of, **1,** 481

B_{12}-Dependent isomerase enzymes: how the protein controls the active site, **14,** 161
B_{12} Models, structural properties of organocobalt coenzyme, **18,** 225
Benzene compounds, substituted, synthesis from acyclic compounds, **13,** 441
Bile pigments, **4,** 363
Binding of heavy metals to proteins, **6,** 139
Binding properties and chemistry of aluminium phosphates, **6,** 173
Bio-active molecules, structural studies on, **13,** 131
Biological surfaces, molecular aspects of, **8,** 389

Biomimetic chemistry, **1**, 553
Biomolecular homochirality, **17**, 347
Biosynthesis of pyrrolizidine alkaloids, **18**, 375
Biosynthesis of sterols, **1**, 259
Biosynthetic products from arachidonic acid, **6**, 489
——, studies, carbon-13 nuclear magnetic resonance in, **4**, 497
—— —— of polyketide microbial metabolites, applications of multinuclear n.m.r. to structural and, **16**, 123
Bis(diphenylphosphino)methane, chemistry of, **12**, 99
Blood groups, human, and carbohydrate chemistry, **7**, 423
Bonding in molecular clusters and their relationship to bulk metals, **15**, 31
Bond strengths, CH, in simple organic compounds: effects of conformation and substitution, **7**, 399
—— valences—a simple structural model for inorganic chemistry, **7**, 359
Boron reagents, carbon–carbon bond formation involving, **11**, 191
Bredt's rule, **3**, 41
Brønsted relation—recent developments, **2**, 475
Brownian dynamics with hydrodynamic interactions: the application to protein diffusional problems, **14**, 421
Butadiene, polymerization and copolymerization of, **6**, 235

Calciferols, hormonal: chemistry of 'Vitamin' D, **6**, 83
Calorimetric investigations of hydrogen bond and charge-transfer complexes, **3**, 193
Cancer and chemicals, **4**, 289
Carbohydrate chemistry and human blood groups, **7**, 423
Carbohydrate differentiation antigens, structural and conformational characterization of, **16**, 161
Carbohydrate-directed macromolecules, transition-metal oxide chelates of, **8**, 221
Carbohydrate–proteincomplexes,glycoproteins,and proteoglycans,ofhuman tissues, chemical aspects of, **2**, 355
Carbohydrates to enzyme analogues, **8**, 85
Carbon–carbon bond formation involving boron reagents, **11**, 191
Carbon-13 nuclear magnetic resonance in biosynthetic studies, **4**, 497
Carbonium ions, carbanions, and radicals, chirality in, **2**, 397
Carbonyl clusters, metal, relationship with supported metal catalysts, **10**, 159
—— compounds, photochemistry of, **1**, 465
—— equivalents, silicon-containing, **11**, 493
—— group transpositions, **11**, 397
Carcinogens, chemical, mechanisms of reaction with nucleic acid, **9**, 241
Catalysis and coordination compounds involving electron-rich main group elements, **15**, 309
Catalysis and surface chemistry, new perspectives, **6**, 373
Catalysis, homogeneous, and organometallic chemistry, the 16 and 18 electron rule in, **1**, 337
—— of the olefin metathesis reaction, **4**, 155
Catalysts for oxygen and chlorine evolution, heterogeneous redox, **18**, 225
Catalysts, supported metal, relationship with metal carbonyl clusters, **10**, 159
Cationic species in protonic superacids and acidic melts, stabilization of unusual, **16**, 1
CENTENARY LECTURE. Biomimetic chemistry, **1**, 553
CENTENARY LECTURE. Catalysis and coordination compounds involving electron-rich main group elements, **15**, 309
CENTENARY LECTURE. Chemical multiplication of chirality: science and applications **18**, 187
CENTENARY LECTURE. Cyclopentanoids: a challenge for new methodology **11**, 141
CENTENARY LECTURE. Hydrocarbon reactions at metal centres, **11**, 283
CENTENARY LECTURE. Light scattering in pure liquids and solutions, **6**, 109
CENTENARY LECTURE. Long-range electron-transfer in blue copper proteins, **15**, 17
CENTENARY LECTURE. Metal Clusters in biology, **10**, 455
CENTENARY LECTURE. Molecular Ingredients of heterogeneous catalysis, **13**, 321

CENTENARY LECTURE. Organic reaction paths: a theoretical approach, **13,** 1
CENTENARY LECTURE. Phase equilibrium and interfacial structure, **14,** 121
CENTENARY LECTURE. Quadruple bonds and other multiple metal to metal bonds, **4,** 27
CENTENARY LECTURE. Reactivities of carbon disulphide, carbon dioxide, and carbonyl sulphide towards some transition-metal systems, **11,** 57
CENTENARY LECTURE. Rotationally and vibrationally inelastic scattering of molecules, **3,** 407
CENTENARY LECTURE. Systematic development of strategy in the synthesis of polycyclic polysubstituted natural products: the aconite alkaloids, **6,** 413
CENTENARY LECTURE. Three-dimensional structures and chemical mechanisms of enzymes, **1,** 319
Charge transfer and hydrogen bond complexes, calorimetric investigations of, **3,** 193
Charge-transfer complexes, theoretical models of, **15,** 475
Chemical applications of advances in Fourier transform spectroscopy, **4,** 569
—— aspects of affinity chromatography **2,** 249
—— —— of glycoproteins, proteoglycans, and carbohydrate–protein complexes of human tissues, **2,** 355
Chemical education, conceptions, misconceptions, and alternative frameworks in, **13,** 199
—— —— and chemistry teacher education worldwide, new trends in, **17,** 135
—— —— research: facts, findings, and consequences, **9,** 365
—— interpretations of molecular wavefunctions, **5,** 79
—— models of enzymic transimination, **12,** 309
—— processes on heterogeneous catalysis, **13,** 375
Chemically-induced dynamic electron polarization (CIDEP), role in chemistry, **8,** 29
Chemicals from the glands of ants, **13,** 245
—— in rodent control, **1,** 381
—— which control plant growth, **6,** 261
Chemisorption and reaction pathways at metal surfaces: the role of surface oxygen, **18,** 451
Chemistry and binding properties of aluminium phosphates, **6,** 173
CHEMISTRY AND FLAVOUR
I Molecular Structure and Organoleptic Quality, **7,** 167
II Application of Research Findings to the Development of Commercial Flavourings, **7,** 177
III Safety Evaluation of Natural and Synthetic Flavourings, **7,** 185
IV The Influence of Legislation on Research in Flavour Chemistry, **7,** 195
V The Development of Flavour in Potable Spirits, **7,** 201
VI The Influence of Flavour Chemistry on Consumer Acceptance, **7,** 212
Chemistry and the new industrial revolution, **5,** 317
——, a topological subject, **2,** 457
—— of aphids and scale insects, **4,** 263
—— of azidoquinones and related compounds, **2,** 415
—— of dental cements, **7,** 265
—— of dyeing, **1,** 145
—— of the gold drugs used in the treatment of rheumatoid arthritis, **9,** 217
—— of homonuclear sulphur species, **2,** 233
—— of long-chain phenols of non-isoprenoid origin, **8,** 499
—— of molten acetamide and acetamide complexes, **17,** 181
—— of the production of organic isocyanates, **3,** 209
—— of peroxonium ions and dioxygen ylides, **14,** 399
—— of transition-metal carbene complexes and their role as reaction intermediates, **2,** 99
—— of 'Vitamin' D: the hormonal calciferols, **6,** 83
——, some considerations on the philosophy of, **5,** 203
Chirality, chemical multiplications of, science and applications, **18,** 187
Chirality in carbonium ions, carbanions, and radicals, **2,** 397
Chirality, symmetry, and molecular, **15,** 189

Chlorophyll chemistry, n.m.r. spectral change as a probe, **6**, 467
Chromatography, affinity, chemical aspects of, **2**, 249
cis- and *trans*-Effects of ligands, **2**, 163
Clathrates and molecular inclusion phenomena, **7**, 65
Cobalt-mediated radical reactions in organic synthesis, **17**, 361
Collisional transfer of rotational energy and spectral lineshapes, **7**, 219
Compartmental ligands: routes to homo- and hetero-dinuclear complexes, **8**, 199
Complex formation between sugars and metal cations, **9**, 415
—— hydride reducing agents, the functional group selectivity of, **5**, 23
Complexes, alkali-metal, in aqueous solution, **4**, 549
—— homo- and hetero-dinuclear, routes *via* compartmental ligands, **8**, 199
——, 1-D metallic, **9**, 429
Complexes, square-planar, isomerization mechanisms of, **9**, 185
Computer resolution of overlapping electronic absorption bands, **9**, 143
Conductivity and superconductivity in polymers, **5**, 95
Conformation and substitution, effects of, on individual CH bond strengths in simple organic compounds, **7**, 399
—— of rings and neighbouring group effects, development of Haworth's concepts of, **3**, 1
Conformational analysis of some alcohols and amines: a comparison of molecular orbital theory, rotational and vibrational spectroscopy, **5**, 411
—— —— of transition metal η^1-acyl complexes: steric interactions and stereoelectronic effects, **17**, 147
—— studies on small molecules, **1**, 293
Contribution of ion-pairing to 'memory effects', **4**, 251
Contributions of pulse radiolysis to chemistry, **7**, 235
Conversion of ammonium cyanate into urea—a saga in reaction mechanisms, **7**, 1
Co-ordination chemistry of aryldiazonium cations: aryldiazenato (arylazo) complexes of transition metals, and the aryldiazenato-nitrosyl analogy, **4**, 443
Corrin synthesis, post-B_{12} problems in, **5**, 377
Crystal field approach to absorption bands in the spectra of stars, **5**, 233
Crystal structure determination: a critical view, **13**, 157
Crystals and molecules, organic, non-bonded interactions of atoms in, **7**, 133
Current aspects of unimolecular reactions, **12**, 163
Cyanocobalt(III) complexes, the synthesis of mononuclear, **12**, 267
Cyanoketenes: synthesis and cycloadditions, **10**, 289
Cyclization, initiation of, using 3-methylcyclohex-2-enone derivatives, **9**, 265
—— of phenols, anionic, **12**, 213
Cyclopentanoids: a challenge for new methodology, **11**, 141
Cyclopolymerization, **1**, 523

Dakin–West reaction, **17**, 91
Dental cements, chemistry of, **7**, 265
Designing drugs to fit a macromolecular receptor, **13**, 279
Development of flavour in potable spirits, **7**, 201
4-Dialkylaminopyridines: super acylation and alkylation catalysts, **12**, 129
Diazirines, the thermolysis and photolysis of, **11**, 127
β-Dicarbonyl compounds, light-induced tautomerism of, **13**, 69
Dielectric relaxation in polymer solutions, **1**, 49
Diels–Alder reaction, stereochemical aspects of the intramolecular, **16**, 187
Diffusion in liquids, the effect of isotopic substitution on, **5**, 215
Diffusional problems, Brownian dynamics with hydrodynamic interactions: the application to protein, **14**, 421
Difluoroamino-radical, gas-phase kinetics of, **3**, 17
Droplets and gases, interactions in the atmosphere of, **1**, 411
Drug design, isosterism and molecular modification in, **8**, 563
—— ——, quantitative **3**, 273
Dyeing, chemistry of, **1**, 145

Echinoderms, **1**, 1

Education, chemical, a reassessment of research in, **1,** 27
——, ——, review of research and development in the U.K., 1972—1976, **7,** 317
Effect of isotopic substitution on diffusion in liquids, **5,** 215
Electrochemical techniques, application of to study of homogeneous chemical reactions, **4,** 471
Electrode and related structures, photoelectron spectroscopic structures of, **14,** 1
Electron as a chemical entity, **4,** 323
—— pair model, angular geometries of hydrogen-bonded dimers: a simple electrostatic interpretation of the success of the, **16,** 467
—— scattering spectroscopy, threshold, **3,** 467
—— spectroscopy, **1,** 355
Electronic absorption bands, overlapping, computer resolution of, **9,** 143
Electronic properties of some chain and layer compounds, **5,** 51
—— transitions, vibrational intensities in, **5,** 165
Electrons, solvated, in solutions of metals, **5,** 337
Electron spin resonance of haemoglobin and myoglobin, **12,** 387
Electron-transfer, long range, in blue copper proteins, **15,** 17
Electrophilic aromatic substitutions, non-conventional, and related reactions, **3,** 167
—— *C*-nitroso-compounds, **6,** 1
Electrophoresis, historical development of sodium dodecyl sulphate–polyacrylamide gel, **14,** 225
Elimination reactions, isotope effect studies of, **1,** 163
Enaminones, **6,** 277
Energetics of neighbouring group participation, **2,** 295
Enumeration methods for isomers, **3,** 355
Environmental chemical influences on behaviour and mentation, **15,** 93
—— lead in perspective, **8,** 63
—— polycyclic aromatic compounds, modern analytical methods for, **10,** 113
—— protection in the distribution of hazardous chemicals, **4,** 99
—— regulation: an international view, **5,** 431
Enzyme analogues from carbohydrates, **8,** 85
Enzymes, immobilized, **6,** 215
—— in organic synthesis, **3,** 387
——, the logic of working with, **2,** 1
—— of secondary metabolism in microorganisms, **17,** 383
——, three-dimensional structures and chemical mechanisms of, **1,** 319
Enzyme-catalysed reactions, reactive intermediates in, **13,** 97
Enzymic reactions, stereochemical choice in **8,** 447
E.s.r. spectroscopy, applications to kinetics and mechanism in organic chemistry, **8,** 1
Experimental studies on the structure of aqueous solutions of hydrophobic solutes, **2,** 203

FARADAY LECTURE. The electron as a chemical entity, **4,** 323
FARADAY LECTURE. The molecular theory of small systems, **12,** 251
Fast reactions, techniques for the kinetic study of, **11,** 227
Fats grown from wastes, **8,** 283
$Fe(CO)_4$, **7,** 527
5-Substituted pyrimidine nucleosides and nucleotides, **6,** 43
Fixation, of nitrogen, **1,** 121
Flavins (isoalloxazines), the photophysical and photochemical properties of, **11,** 15
Fluorine, modern methods for introduction into organic molecules: an approach to compounds with altered chemical and biological activities, **16,** 381
Fluorescence decay dynamics of the halogens and interhalogens, **15,** 405
Fluxionality of polyene and polyenyl metal complexes, **15,** 167
Forces between simple molecules, **2,** 181
Foreign compounds in mammals, importance of non-enzymic chemical reaction processes to the rate of, **9,** 63
Formation of hydrocarbons by microorganisms, **3,** 309
Fourier transform spectroscopy, chemical applications of advances in, **4,** 569

Four-membered rings and reaction mechanisms, **5,** 149
Friedel–Crafts acylation of alkenes, **1,** 73
Functional group selectivity of complex hydride reducing agents, **5,** 23

Gas-phase kinetics of the difluoroamino-radical, **3,** 17
Gases, and droplets, interactions in the atmosphere of, **1,** 411
Glass transition: salient facts and theoretical models, **12,** 361
Glycoproteins, proteoglycans, and carbohydrate–protein complexes of human tissues, chemical aspects of, **2,** 355
Glycoproteins, synthesis of complex oligosaccharide chains of, **13,** 15
Gold drugs used in the treatment of rheumatoid arthritis, chemistry of, **9,** 217
Growth of computational quantum chemistry from 1950 to 1971, **2,** 21
Guanidine derivatives acting at histaminergic receptors **14,** 375

Haemoglobin and myoglobin, electron spin resonance of, **12,** 387
Halogens and interhalogens, fluorescence decay dynamics of, **15,** 405
Handling toxic chemicals—environmental considerations, **4,** 77
Hard-sphere theories of transport properties, **14,** 317
HAWORTH MEMORIAL LECTURE. The consequences of some projects initiated by Sir Norman Haworth, **2,** 145
HAWORTH MEMORIAL LECTURE. The Haworth–Hudson controversy and the development of Haworth's concepts of ring conformation and of neighbouring group effects, **3,** 1
HAWORTH MEMORIAL LECTURE. The sweeter side of chemistry, **14,** 357
HAWORTH MEMORIAL LECTURE. Human blood groups and carbohydrate chemistry, **7,** 423
HAWORTH MEMORIAL LECTURE. Structural studies of polysaccharides, **10,** 409
HAWORTH MEMORIAL LECTURE. Synthesis of complex oligosaccharide chains of glycoproteins, **13,** 15
Hazards in the chemical industry—risk management and insurance, **8,** 419
Health hazards to workers from industrial chemicals, **4,** 82
Heterocyclic compounds, prototropic routes to 1,3- and 1,5-dipoles, and ylides for the synthesis of, **16,** 89
Heterogeneous catalysis, chemical processes on, **13,** 375
High resolution laser spectroscopy, **12,** 453
Histaminergic receptors, guanidine derivatives acting at, **14,** 375
Historical development of sodium dodecyl sulphate–polyacrylamide gel electrophoresis, **14,** 225
Homogeneous catalysis, and organometallic chemistry, the 16 and 18 electron rule in, **1,** 337
Homogeneous chemical reactions, application of electrochemical techniques to the study of, **4,** 471
Homolytic arylation of aromatic and polyfluoroaromatic compounds, **15,** 261
Human blood groups and carbohydrate chemistry, **7,** 423
Hydrocarbon formation by microorganisms, **3,** 309
—— reactions at metal centres, **11,** 283
Hydrogen bond and charge-transfer complexes, calorimetric investigations of, **3,** 193
—— bonded liquids, thermodynamics of, **11,** 257
—— bonding, very strong, **9,** 91
—— isotope effects, kinetic, recent advances in the study of, **3,** 513
Hydrophobic solutes, experimental studies on the structure of aqueous solutions of, **2,** 203

Imines, photochemistry of, **6,** 63
Immobilized enzymes, **6,** 215
Importance of (non-enzymic) chemical reaction processes to the fate of foreign compounds in mammals, **9,** 63
Importance of solvent internal pressure and cohesion to solution phenomena, **4,** 211
Inclusion phenomena, molecular, and clathrates, **7,** 65
Individual CH bond strengths in simple organic compounds: effects of

conformation and substitution, **7,** 399
Industry, chemical, hazards in: risk management and insurance, **8,** 419
Influence of flavour chemistry on consumer acceptance, **7,** 212
Influence of legislation on research in flavour chemistry, **7,** 195
Infrared and Raman vibrational spectroscopy in inorganic chemistry, **4,** 107
INGOLD LECTURE. Four-membered rings and reaction mechanisms, **5,** 149
INGOLD LECTURE. How does a reaction choose its mechanism? **10,** 345
Initiation of cyclization using 3-methyl-cyclohex-2-enone derivatives, **9,** 265
Inorganic chemistry, bond valences, a simple structural model for, **7,** 359
Inorganic pyro-compounds $M_a[(X_2O_7)_b]$, **5,** 269
myo-Inositol phosphates, recent developments in the synthesis of, **18,** 83
Insect attractants of natural origin, **2,** 75
Insecticides, a new group of: synthetic pyrethroids, **7,** 473
Interactions in the atmosphere of droplets and gases, **1,** 411
——, ion–solvent, thermodynamics of, **9,** 381
——, metal–metal, in transition-metal complexes containing infinite chains of metal atoms, **1,** 99
——, non-bonded, of atoms in organic crystals and molecules, **7,** 133
Introducing a new agricultural chemical, **4,** 77
Ion–molecule reactions in the evolution of simple organic molecules in interstellar clouds and planetary atmospheres, **6,** 295
Ion-pairing, contribution to 'memory effects', **4,** 251
Ion–solvent interactions, thermodynamics of, **9,** 381
Ion transfer across model biological membranes, voltammetric studies of, **17,** 319
Isocyanates and ketens, a mechanistic comparison of acylation by, **4,** 231
——, organic, chemistry of the production of, **3,** 209
Isocyanic acid, preparation and properties of, **11,** 41
Isokinetic relationship, **18,** 477
Isomer enumeration methods, **3,** 355
Isomerization mechanisms of square-planar complexes, **9,** 185
Isosterism and molecular modification in drug design, **8,** 563
Isotope effect studies of elimination reactions, **1,** 163
Isotopic hydrogen exchange in purines: mechanisms and applications, **10,** 329
—— substitution effects on diffusion in liquids, **5,** 215

JOHN JEYES LECTURE. Chemicals which control plant growth, **6,** 261
JOHN JEYES LECTURE. Environmental chemical influences on behaviour and mentation, **15,** 93
JOHN JEYES LECTURE. The environmental chemistry of radioactive waste disposal, **15,** 291

KELVIN LECTURE. Across the living barrier, **6,** 325
Ketens and isocyanates, a mechanistic comparison of acylation by, **4,** 231
Kinetics and mechanism in organic chemistry, applications of e.s.r. spectroscopy to, **8,** 1
——, gas-phase, of the difluoroamino-radical, **3,** 17
—— of reactions in aqueous mixtures, **4,** 55

β-Lactams, synthetic routes to, **5,** 181
Lanthanide shift reagents in nuclear magnetic resonance spectroscopy, **2,** 49
Lanthanides and actinides, macrocyclic Schiff base complexes of, **17,** 69
Laser light scattering, quasielastic, **2,** 325
Laser spectroscopy of ultra-trace quantities, **8,** 367
Lasers, tunable, **3,** 293
Lead, environmental, in perspective, **8,** 63
LENNARD-JONES LECTURE. Recent experimental and theoretical work on molecularly simple liquid mixtures, **13,** 173
Leukotrienes; a new class of biologi-

cally active compounds including SRS-A, the synthesis of, **11,** 321
Ligand substitution reactions of square-planar molecules, **14,** 197
Ligands, *cis*- and *trans*-effects of, **2,** 163
——, compartmental: routes to homo- and hetero-dinuclear complexes, **8,** 199
Light-induced tautomerism of β-dicarbonyl compounds, **13,** 69
Lignans and neolignans, the synthesis of, **11,** 75
Liquid mixtures, recent experimental and theoretical work on molecularly simple, **13,** 173
Liquid, surface of a, **7,** 329
LIVERSIDGE LECTURE. On first looking into nature's chemistry:
I The role of small molecules and ions: the transport of elements, **9,** 281
II The role of large molecules, especially proteins, **9,** 325
LIVERSIDGE LECTURE. Recent advances in the study of kinetic hydrogen isotope effects, **3,** 513
LIVERSIDGE LECTURE. The surface of a liquid, **7,** 329

Macrocyclic ligands, synthetic, transition-metal complexes of, **4,** 421
—— Schiff base complexes of lanthanides and actinides, **17,** 69
Macromolecular receptor, designing drugs to fit a, **13,** 279
Main-group elements, ring, cage, and cluster compounds of, **8,** 315
Matrix isolation technique and its application to organic chemistry, **9,** 1
Measurement of effective charge in an organic reaction in solution, **15,** 125
Mechanisms, chemical, and three-dimensional structures of enzymes, **1,** 319
——, isomerization, of square-planar complexes, **9,** 185
—— of the microbial hydroxylation of steroids, **11,** 371
—— of reaction between ultimate chemical carcinogens and nucleic acid, **9,** 241
Medicinal chemistry of anti-leprosy drugs, **16,** 437
MELDOLA MEDAL LECTURE. Chemical aspects of glycoproteins, proteoglycans, and carbohydrate–protein complexes of human tissues, **2,** 355
MELDOLA MEDAL LECTURE. $Fe(CO)_4$, **7,** 527
MELDOLA MEDAL LECTURE. Molecular collisions and the semiclassical approximation, **5,** 125
MELDOLA MEDAL LECTURE. Molecular shapes, **7,** 507
MELDOLA MEDAL LECTURE. N.m.r. spectral change as a probe of chlorophyll chemistry, **6,** 467
MELDOLA MEDAL LECTURE. Organo-transition complexes incorporating bismuth, **17,** 271
MELDOLA MEDAL LECTURE. Redox responsive macrocylic receptor molecules containing transition metal redox centres, **18,** 409
MELDOLA MEDAL LECTURE. The relationship between metal carbonyl clusters and supported metal catalysts, **10,** 159
Meldrum's acid, **7,** 345
Metal carbonyl clusters, relationship with supported metal catalysts, **10,** 159
—— centres, hydrocarbon reactions at, **11,** 283
—— clusters in biology, **10,** 455
Metal–metal bonding and metalloboranes, **3,** 231
—— bonds of various orders, synergic interplay of experiment and theory in studying, **12,** 35
Metal-ion-promoted reactions of organo-sulphur compounds, **6,** 345
1-D Metallic complexes, **9,** 429
Metalloboranes and metal–metal bonding, **3,** 231
—— bonds, multiple (especially quadruple), **4,** 27
—— interactions in transition-metal complexes containing infinite chains of metal atoms, **1,** 99
Metallocenes as Reaction Intermediates, **17,** 453
Metals, binding to proteins, **6,** 139
Methyl group removal in steroid biosynthesis, **10,** 435
Micelle-forming surfactant solutions, photophysics of molecules in, **7,** 453
Micelles in aqueous solution, **6,** 25
Microbes, use in the petrochemical industry, **8,** 297

Micro-organisms, protein production by, **8,** 143
Mixed-valence complexes, the chemistry and spectroscopy of, **13,** 219
Modern methods for the introduction of fluorine into organic molecules: an approach to compounds with altered chemical and biological activities, **16,** 381
Molecular aspects of biological surfaces, **8,** 389
—— beam reactive scattering, **11,** 1
—— collisions and the semiclassical approximation, **5,** 125
—— orbital theory, comparison with rotational and vibrational spectroscopy in conformational analysis of alcohols and amines **5,** 411
—— recognition by synthetic receptors, **15,** 63
—— shapes, **7,** 507
—— tectonics, the construction of polyhedral clusters, **13,** 353
—— structure and organoleptic quality, **7,** 167
—— theory of small systems, **12,** 251
—— wavefunctions, chemical interpretations of, **5,** 79
Molecules, the size of, **15,** 449
Molybdenum and tungsten; alkoxy, amido, hydrazido, and related compounds of, **12,** 331
Monoalkyltriazenes, **7,** 377
Morphogenesis, biological, the physical chemistry of, **10,** 491
Motion, molecular, and time-correlation functions, **7,** 89
Multistability in open chemical reaction systems, **5,** 359
Myoglobin and haemoglobin, electron spin resonance of, **12,** 387

Natural products from echinoderms, **1,** 1
—— ——, polycyclic polysubstituted, systematic development of strategy in, **6,** 413
Neighbouring-group effects and ring conformation, development of Haworth's concepts of, **3,** 1
—— participation, energetics of, **2,** 295
Neutron scattering techniques, small angle, recent developments in the characterization of oxide sols, **15,** 335
New insights into aliphatic nucleophilic substitution reactions from the use of pyridines as leaving groups, **13,** 47
New perspectives in surface chemistry and catalysis, **6,** 373
Nitrile sulphides, the chemistry of, **18,** 33
Nitrogen fixation, **1,** 121
S-Nitrosation and the reactions of *S*-nitroso compounds, **14,** 171
Nitroso-alkenes and nitroso-alkynes, **12,** 53
C-Nitroso-compounds, electrophilic, **6,** 1
N.m.r. and vibrational spectroscopic studies, structure in solvents and solutions, **12,** 1
Non-bonded interactions of atoms in organic crystals and molecules, **7,** 133
Non-conventional electrophilic aromatic substitutions and related reactions, **3,** 167
Nuclear magnetic resonance and the periodic table, **5,** 1
—— —— ——, carbon-13, in biosynthetic studies, **4,** 497
—— —— —— methods (new) for tracing the future of hydrogen in biosynthesis, **8,** 539
—— —— —— spectral change as a probe of chlorophyll chemistry, **6,** 467
—— —— —— spectroscopy, lanthanide shift reagents in, **2,** 49
—— —— —— ——: spin–lattice relaxation, **4,** 401
—— quadrupole interactions in solids, **15,** 225
Nucleic acid, mechanisms of reaction with ultimate chemical carcinogens, **9,** 241
Nucleophiles, reactivity of substituted aliphatic nitro-compounds with, **17,** 285
Nucleosides and nucleotides, pyrimidine, 5-substituted, **6,** 43
Nutritional chemistry of inorganic trace constituents of the diet, **10,** 270
NYHOLM MEMORIAL LECTURE. Chemical education research: facts, findings, and consequences, **9,** 365
NYHOLM MEMORIAL LECTURE. Conceptions, misconceptions, and alterna-

tive frameworks in chemical education, **13,** 199
NYHOLM MEMORIAL LECTURE. Forward from Nyholm's March On Lecture, **3,** 373
NYHOLM MEMORIAL LECTURE. Growth, change, challenge, **5,** 253
NYHOLM MEMORIAL LECTURE. New trends in chemical education and chemistry teacher education worldwide, **17,** 135
NYHOLM MEMORIAL LECTURE. Ring, cage, and cluster compounds of the main group elements, **8,** 315
NYHOLM MEMORIAL LECTURE. Solving chemical problems, **11,** 171
NYHOLM MEMORIAL LECTURE. Synergic interplay of experiment and theory in studying metal–metal bonds of various orders, **12,** 35

Olefin metathesis and its catalysis, **4,** 155
Olefinic compounds, photochemistry of, **3,** 329
On first looking into nature's chemistry:
I The role of small molecules and ions: the transport of the elements, **9,** 281
II The role of large molecules, especially proteins, **9,** 325
Organic chemistry of superoxide, **6,** 195
Organic reaction paths: a theoretical approach, **13,** 1
Organoboranes as reagents for organic synthesis, preparation of, **3,** 443
Organoborates in organic synthesis: the use of alkenyl-, alkynyl-, and cyano-borates as synthetic intermediates, **6,** 393
Organometallic chemistry and homogeneous catalysis, the 16 and 18 electron rule in, **1,** 337
Organomethyl compounds, synthesis, structure, and vibrational spectra, **9,** 25
Organosulphur compounds, metal-ion-promoted reactions of, **6,** 345
Organotransition complexes incorporating bismuth, **17,** 271
Organotransition-metal redox reactions, synthetic applications of, **18,** 153
Organotransition-metal complexes: stability, reactivity, and orbital correlations, **2,** 271
Orthoesters and dialkoxycarbenium ions: reactivity, stability, structure, and new synthetic applications, **16,** 75
Overtone spectroscopy and unimolecular reactions, **17,** 31
Oxide catalysts, oxidative coupling of methane using, **18,** 251
Oxygen, singlet molecular, **10,** 205

PEDLER LECTURE. Organic poly(sulphur-nitrogen) chemistry, **15,** 1
PEDLER LECTURE. Porphyrins and related ring systems, **4,** 1
Peroxonium ions and dioxygen ylides, the chemistry of, **14,** 399
Phase boundaries, reactivity of organic molecules at, **1,** 229
Phase equilibrium and interfacial structure, **14,** 121
Phenols, anionic cyclization of, **12,** 213
——, long-chain, of non-isoprenoid origin, **8,** 499
Philosophy of chemistry, some considerations, **5,** 203
Phosphates, aluminium, the chemistry and binding properties of, **6,** 173
Phosphorus compounds, tervalent, in organic synthesis, **3,** 87
Photochemistry of azobenzene and its derivatives, **1,** 481
—— of carbonyl compounds, **1,** 465
—— of imines, **6,** 63
—— of olefinic compounds, **3,** 329
—— of organic sulphur compounds, **4,** 523
—— of polyoxometallates of molybdenum and tungsten and/or vanadium, **18,** 1
—— of the uranyl ion, **3,** 139
—— of transition-metal co-ordination compounds—a survey, **1,** 241
Photocyclization and photochemistry of aryl halides, **10,** 181
Photodegradation and stabilization of commercial polyolefins, **4,** 533
Photoelectron spectroscopic studies of electrode and related structures, **14,** 1
Photophysical and photochemical properties of flavins (isoalloxazines), **11,** 15
Photophysics of molecules in micelle-forming surfactant solutions, **7,** 453

Plant growth, control by chemicals, **6,** 261
Plastocyanin, structure and electron-transfer reactivity of the blue copper protein, **14,** 283
Platinum metal complexes, η^5-cyclopentadienyl and η^6-arene as protecting ligands towards, **10,** 1
Polyatomic cations, spectroscopic structure of open-shell, **17,** 45
Polyelectrodes: the behaviour and applications of mixed redox systems, **15,** 141
Polyhedral clusters, the construction of, **13,** 353
Polymer solutions, dielectric relaxation in, **1,** 49
—— supports, insoluble, use in organic chemical synthesis, **3,** 65
Polymerization and copolymerization of butadiene, **6,** 235
Polymerization in organized systems, **14,** 45
Polymers, conductivity and superconductivity in, **5,** 95
Polymers, recent advances in the photo-oxidation and stabilization of, **15,** 373
Polyolefins, commercial, photodegradation and stabilization of, **4,** 533
Polysaccharides, structural studies of, **10,** 409
Poly(sulphur–nitrogen) chemistry, organic, **15,** 1
Porphyrins and related ring systems, **4,** 1
Post-B_{12} problems in corrin synthesis, **5,** 377
Potentiometric titrations of aqueous carbonate solutions, **14,** 265
Preparation of organoboranes: reagents for organic synthesis, **3,** 443
—— and properties of isocyanic acid, **11,** 41
PRESIDENTIAL ADDRESS 1976. Chemistry and the new industrial revolution, **5,** 317
PRIESTLEY LECTURE. 'On the science of deep-sea diving—observations on the respiration of different kinds of air', **15,** 503
Product stability in kinetically-controlled organic reactions, **16,** 313
Properties and syntheses of sweetening agents, **6,** 431
Prostaglandins, tomorrow's drugs, **4,** 589
——, thromboxanes, PGX: biosynthetic products from arachidonic acid, **6,** 489
Prostanoids, total syntheses of, **2,** 29
Protecting ligands, η^5-cyclopentadienyl and η^6-arene towards platinum metal complexes, **10,** 1
Protein production by micro-organisms, **8,** 143
Proteins, binding of heavy metals to, **6,** 139
Proteins, role of in nature's chemistry, **9,** 325
Prototropic routes to 1,3- and 1,5-dipoles, and 1,2-ylides: applications to the synthesis of heterocyclic compounds, **16,** 89
Pulse radiolysis, contributions to chemistry, **7,** 235
Purines, isotopic hydrogen exchange in, mechanisms and applications, **10,** 329
Pyridines as leaving groups, new insights into aliphatic nucleophilic substitution from the use of, **13,** 47
Pyrimidine nucleosides and nucleotides, 5-substituted, **6,** 43
Pyro-compounds, inorganic, $M_a[(X_2O_7)_b]$, **5,** 269
Pyrrolizidine alkaloids, biosynthesis of, **18,** 375

Quadruple bonds and other multiple metal to metal bonds, **4,** 27
Quantitative drug design, **3,** 273
Quantum chemistry, computational, growth of from 1950 to 1971, **2,** 21
—— mechanical tunnelling in chemistry, **1,** 211
Quasielastic laser light scattering, **2,** 325

Radical cations in condensed phases, **13,** 393
—— reactions, cobalt-mediated, in organic synthesis, **17,** 361
Radioactive and toxic wastes: a comparison of their control and disposal, **4,** 90
Radioactive waste disposal, the environmental chemistry of, **15,** 291
Radiolysis, pulse, contributions to chemistry, **7,** 235
Raman and infrared vibrational spec-

troscopy in inorganic chemistry, **4,** 107
R. A. ROBINSON MEMORIAL LECTURE. Potentiometric titrations of aqueous carbonate solutions, **14,** 265
R. A. ROBINSON MEMORIAL LECTURE. Thermodynamics of hydrogen-bonded liquids, **11,** 257
Reaction branching and extreme kinetic isotope effects in the study of reaction mechanisms, **18,** 209
Reaction mechanisms, four-membered rings and, **5,** 149
——, the conversion of ammonium cyanate into urea, **7,** 1
Reactions involving the triple bond in dimolybdenum and ditungsten hexaalkoxides and C–C, C–N, C–O triple bonds, **14,** 69
Reactive intermediates in enzyme-catalysed reactions, **13,** 97
Reactivities of carbon disulphide, carbon dioxide, and carbonyl sulphide towards some transition-metal systems, **11,** 57
Reactivity of organic molecules at phase boundaries, **1,** 229
—— —— substituted aliphatic nitrocompounds with nucleophiles, **17,** 285
Recent advances in the photo-oxidation and stabilization of polymers, **15,** 373
Recent advances in the study of kinetic hydrogen isotope effects, **3,** 513
Recent chemical studies of sodium nitroprusside relevant to its hypotensive action, **16,** 361
Recent developments in the characterization of oxide sols using small angle neutron scattering techniques, **15,** 335
Recent syntheses in the Vitamin D field, **9,** 449
Redox responsive macrocylic receptor molecules containing transition metal redox centres, **18,** 409
Redox systems, polyelectrodes: the behaviour and applications of mixed, **15,** 141
Research in chemical education: a reassessment, **1,** 27
Resonant descriptions of bonding and reactivity of group VIII–IB metals in the solid state, **16,** 339
RESOURCES CONSERVATION BY NOVEL BIOLOGICAL PROCESSES
I Grow Fats from Wastes, **8,** 283
II The Use of Microbes in the Petrochemical Industry, **8,** 297
III Utilization of Agricultural and Food Processing Wastes containing Carbohydrates, **8,** 309
Retrosynthetic thinking—Essentials and examples, **17,** 111
Review of chemical education research and development in the U.K., 1972—1976, **7,** 317
RHÔNE-POULENC LECTURE. The origin of the specificity in the recognition of oligosaccharides by proteins, **18,** 347
Ring, cage, and cluster compounds of the main group elements, **8,** 315
ROBERT ROBINSON LECTURE. Post-B_{12} problems in corrin synthesis, **5,** 377
ROBERT ROBINSON LECTURE. Retrosynthetic thinking—Essentials and examples, **17,** 111
ROBERT ROBINSON LECTURE. The logic of working with enzymes, **2,** 1
ROBERT ROBINSON LECTURE. Vitamin B_{12}. Retrospect and prospects, **9,** 125
Rodent control, chemicals in, **1,** 381
Role of chemically-induced dynamic electron polarization (CIDEP) in chemistry, **8,** 29
Rotationally and vibrationally inelastic scattering of molecules, **3,** 407

Safety evaluation of natural and synthetic flavourings, **7,** 185
Scale insects and aphids, chemistry of, **4,** 263
Semistable molecules in the laboratory and in space, **11,** 435
Silicon compounds in organic synthesis, some uses of, **10,** 83
—— -containing carbonyl equivalents, **11,** 493
—— in organic synthesis, **7,** 15
SIMONSEN LECTURE. Cobalt-mediated radical reactions in organic synthesis, **17,** 361
16 and 18 Electron rule in organometallic chemistry and homogeneous catalysis, **1,** 337
Size of molecules, **15,** 449
Small molecules, conformation studies on, **1,** 293

Sodium nitroprusside, recent chemical studies of, relevant to its hypotensive action, **16,** 361
Solids, surface energy of, **1,** 445
Sols, oxide, recent developments in the characterization of, using small angle neutron scattering techniques, **15,** 335
Solute–solvent interactions, spectroscopic studies of, **5,** 297
Solution phenomena, the importance of solvent internal pressure and cohesion, **4,** 211
Solutions of metals: solvated electrons, **5,** 337
Solvent internal pressure and cohesion, importance to solution phenomena, **4,** 211
Solving chemical problems, **11,** 171
Some considerations on the philosophy of chemistry, **5,** 203
Some recent developments in chemistry teaching in schools, **1,** 495
Sonochemistry: Part 1—the physical aspects, **16,** 239
Sonochemistry: Part 2—the synthetic applications, **16,** 275
Spectra of stars, absorption bands in, a crystal field approach, **5,** 233
Spectral lineshapes, collisional transfer of rotational energy with, **7,** 219
Spectroscopic structure of open-shell polyatomic cations, **17,** 45
—— studies of solute–solvent interactions, **5,** 297
Spectroscopy and chemistry of mixed-valence complexes, **13,** 219
Spectroscopy, electron, **1,** 355
——, Fourier transform, chemical applications of advances in, **4,** 569
——, laser, of ultra-trace quantities, **8,** 367
——, rotational and vibrational, comparison with molecular orbital theory in conformational analysis of alcohols and amines, **5,** 411
——, threshold electron scattering, **3,** 467
Spin–lattice relaxation: a fourth dimension for proton n.m.r. spectroscopy, **4,** 401
Square-planar complexes, isomerization mechanisms of, **9,** 185
Square-planar molecules, ligand substitution reactions of, **14,** 197
SRS-A, the synthesis of leukotrienes: a new class of biologically active compounds including, **11,** 321
Stability, reactivity, and orbital correlations of organo-transition-metal complexes, **2,** 271
Stabilization of unusual cationic species in protonic superacids and acidic melts, **16,** 1
Stereochemical aspects of the intramolecular Diels–Alder reaction, **16,** 187
Stereochemical choice in enzymic reactions, **8,** 447
Stereoselective synthesis of steroid side-chains, **12,** 75
Steric interactions and stereoelectronic effects, a conformational analysis of transition metal η^1-acyl complexes, **17,** 147
Steroid biosynthesis, methyl group removal in, **10,** 435
——, the mechanism of the microbial hydroxylation of, **11,** 371
——, routes to by intramolecular Diels–Alder reactions of *o*-xylylenes, **9,** 41
—— side-chains, stereoselective synthesis of, **12,** 75
Sterols, biosynthesis of, **1,** 259
Structural isomerization in DNA: the formation of cruciform structures in supercoiled DNA molecules, **18,** 53
Structure and electron-transfer reactivity of the blue copper protein plastocyanin, **14,** 283
Structure in solvents and solutions—N.m.r. and vibrational spectroscopic studies, **12,** 1
—— of aqueous solutions of hydrophobic solutes, experimental studies on, **2,** 203
Substitution and conformation, effects of, on individual CH bond strengths in simple organic compounds, **7,** 399
Sugars, complex formation with cations, **9,** 415
Sulphonyl transfer reactions, **18,** 123
Sulphoximides, **4,** 189
Sulphoximides—an update, **9,** 477
Sulphur compounds, organic, photochemistry of, **4,** 523
—— organic compounds of, metal-ion-promoted reactions of, **6,** 345
—— species, homonuclear, chemistry of, **2,** 233

Superconductivity and conductivity in polymers, **5,** 95
Superoxide, organic chemistry of, **6,** 195
Surface chemistry and catalysis, new perspectives, **6,** 373
—— energy of solids, **1,** 445
—— modified electrodes, **8,** 259
—— of a liquid, **7,** 329
Surfaces, biological, molecular aspects of, **8,** 389
——, solid, their acidity, **8,** 475
Sweetening agents, properties and syntheses of, **6,** 431
Sweeter side of chemistry, **14,** 357
Symmetry and molecular chirality, **15,** 189
Syntheses and properties of sweetening agents, **6,** 431
—— of mononuclear cyanocobalt(III) complexes, **12,** 267
——, recent, in the Vitamin D field, **9,** 449
——, total, of prostanoids, **2,** 29
Synthesis and cycloadditions, cyanoketenes, **10,** 289
——, organic, cobalt-mediated radical reactions in, **17,** 361
—— and synthetic utility of halolactones, **8,** 171
——, of corrins, post-B_{12} problems in **5,** 377
—— of complex oligosaccharide chains of glycoproteins, **13,** 15
——, of heterocyclic compounds, applications of prototropic routes to 1,3- and 1,5-dipoles, and 1,2-ylides, **16,** 89
—— of leukotrienes: a new class of biologically active compounds including SRS-A, **11,** 321
—— of lignans and neolignans, **11,** 75
—— of polycyclic polysubstituted natural products, systematic development of strategy in, **6,** 413
——, organic, enzymes in, **3,** 387
——, organic, preparation of organoboranes as reagents for, **3,** 443
——, organic, silicon in, **7,** 15
——, organic, some uses of silicon compounds, **10,** 83
——, organic, tervalent phosphorus compounds in, **3,** 87
——, organic, use of inorganic polymer supports in, **3,** 65
——, organic, the use of organoborates as synthetic intermediates, **6,** 393
——, structure, and vibrational spectra of organomethyl compounds, **9,** 25
—— of substituted benzene compounds from acyclic precursors, **13,** 441
Synthetic pyrethroids. A new group of insecticides, **7,** 473
—— routes to β-lactams, **5,** 181
Systematic development of strategy in the synthesis of polycyclic polysubstituted natural products: the aconite alkaloids, **6,** 413

TATE AND LYLE LECTURE. From carbohydrates to enzyme analogues, **8,** 85
TATE AND LYLE LECTURE. Spin-lattice relaxation: a fourth dimension for proton n.m.r. spectroscopy, **4,** 401
TATE AND LYLE LECTURE. Structural and conformational characterization of carbohydrate differentiation antigens, **16,** 161
TATE AND LYLE LECTURE. Transition-metal oxide chelates of carbohydrate-directed macromolecules, **8,** 221
Teaching of chemistry in schools, some recent developments in, **1,** 495
Techniques for the kinetic study of fast reactions in solution, **11,** 227
Tervalent phosphorus compounds in organic synthesis, **3,** 87
Theoretical models of charge-transfer complexes, **15,** 475
Thermal, photochemical, and transition-metal mediated routes to steroids by intramolecular Diels–Alder reactions of *o*-xylylenes (*o*-quinodimethanes), **9,** 41
Thermodynamics of ion–solvent interactions, **9,** 381
Thermolysis and photolysis of diazirines, **11,** 127
Three-dimensional structures and chemical mechanisms of enzymes, **1,** 319
Threshold electron scattering spectroscopy, **3,** 467
Thromboxanes, prostaglandins, PGX: biosynthetic products of arachidonic acid, **6,** 489
TILDEN LECTURE. Alkoxy, amido, hydrazido, and related compounds of molybdenum and tungsten, **12,** 331
TILDEN LECTURE. Applications of e.s.r.

spectroscopy to kinetics and mechanism in organic chemistry, **8,** 1
TILDEN LECTURE. Carbon–carbon bond formation involving boron reagents, **11,** 191
TILDEN LECTURE. Chemistry and spectroscopy of mixed-complexes, **13,** 219
TILDEN LECTURE. Concerning stereochemical choice in enzymic reactions, **8,** 447
TILDEN LECTURE. η^5-Cyclopentadienyl and η^6-arene as protecting ligands towards platinum metal complexes **10,** 1
TILDEN LECTURE. Electrophilic *C*-nitroso-compounds, **6,** 1
TILDEN LECTURE. Initiation of cyclization using 3-methylcyclohex-2-enone derivatives, **9,** 265
TILDEN LECTURE. Molecular beam reactive scattering, **11,** 1
TILDEN LECTURE. Molecular recognition by synthetic receptors, **15,** 63
TILDEN LECTURE. New perspectives in surface chemistry and catalysis, **6,** 373
TILDEN LECTURE. Overtone spectroscopy and unimolecular reactions, **17,** 31
TILDEN LECTURE. Semistable molecules in the laboratory and in space, **11,** 435
TILDEN LECTURE. Some uses of silicon compounds in organic synthesis, **10,** 83
TILDEN LECTURE. Structural studies on bio-active molecules, **13,** 131
TILDEN LECTURE. Structure and electron-transfer reactivity of the blue copper protein plastocyanin, **14,** 283
TILDEN LECTURE. The collision dynamics of vibrationally excited molecules, **14,** 141
TILDEN LECTURE. Valence in transition-metal complexes, **1,** 431
Time-correlation functions and molecular motion, **7,** 89
Topological subject—chemistry, **2,** 457
Trace constituents of the diet, chemical aspects, **10,** 233
—— organic constituents of the diet, sources and biogenesis, **10,** 280
Transimination, chemical models of enzymic, **12,** 309
Transition-metal carbene complexes, chemistry and rôle as reaction intermediates, **2,** 99
—— complexes, containing infinite chains of metal atoms, metal–metal interactions in, **1,** 99
—— complexes of synthetic macrocyclic ligands, **4,** 421
—— complexes, valence in, **1,** 431
—— co-ordination compounds, photochemistry of, **1,** 241
—— hydride complexes, **12,** 415
—— systems, reactivities of carbon disulphide, carbon dioxide, and carbonyl sulphide systems towards, **11,** 57
—— oxide chelates of carbohydrate-directed macromolecules, **8,** 221
Transport properties, hard-sphere theories of, **14,** 317
Triple bond in dimolybdenum and ditungsten hexa-alkoxides and C–C, C–N, C–O triple bonds, reactions involving the, **14,** 69
Tunable lasers, **3,** 293

Ultraviolet photoelectron studies of unstable molecules with relevance to synthesis, quantum chemistry, and spectroscopy, **18,** 317
Unimolecular reactions, current aspects of, **12,** 163
Uranyl ion, photochemistry of, **3,** 139
Use of insoluble polymer supports in organic chemical synthesis, **3,** 65
Utilization of agricultural and food processing wastes containing carbohydrates, **8,** 309

Valence in transition-metal complexes, **1,** 431
Valences, bond, a simple structural model for inorganic chemistry, **7,** 359
Very strong hydrogen bonding, **9,** 91
Vibrational and n.m.r. spectroscopic studies, structure in solvents and solutions, **12,** 1
——, infrared, and Raman spectroscopy in inorganic chemistry, **4,** 107
—— intensities in electronic transitions, **5,** 165
—— spectra, synthesis, and structure

of organomethyl compounds, **9,** 25
Vibrationally and rotationally inelastic scattering of molecules, **3,** 407
Vibrationally excited molecules, the collision dynamics of, **14,** 141
Vinylcyclopropane rearrangements, **17,** 231
Viologens, electrochemistry of, **10,** 49
Vitamin B_{12}, retrospects and prospects, **9,** 125
Vitamin D, chemistry of: the hormonal calciferols, **6,** 83
Vitamin D, recent syntheses in, **9,** 449
Voltammetric studies of ion transfer across biological membranes, **17,** 319

Wittig olefination reaction with carbonyl compounds other than aldehydes and ketones, **17,** 1

Ylides, arsonium, (with some mention also of arsinimines, stibonium and bismuthonium ylides), **16,** 45
Ylides, the chemistry of peroxonium ions and dioxygen, **14,** 399